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Guilt and Shame in U.S. Climate Change Communication

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Summary and Keywords

Some of the major misconceptions in the United States about climate change—such as the focus on scientific uncertainty, the "debate" over whether climate change is caused by humans, and pushback about how severe the consequences might be—can be seen as communications battles. An interesting area within communications is the contrasting use of guilt and shame for climate-related issues. Guilt and shame are social emotions (along with embarrassment, pride, and others), but guilt and shame are also distinct tools. On the one hand, guilt regulates personal behavior, and because it requires a conscience, guilt can be used only against individuals. Shame, on the other hand, can be used against both individuals and groups by calling their behavior out to an audience. Shaming allows citizens to express criticism and social sanctions, attempting to change behavior through social pressure, often because the formal legal system is not holding transgressors accountable. Through the use of guilt and shame we can see manifestations of how we perceive the problem of climate change and who is responsible for it. For instance, in October 2008, Chevron, one of the world's largest fossil fuel companies, placed advertisements around Washington, DC, public transit stops featuring wholesome-looking, human faces with captions such as "I will unplug things more," "I will use less energy," and "I will take my golf clubs out of the trunk." Six months later, DC activists reworked the slogans by adding to each the phrase "while Chevron pollutes." This case of corporate advertising and subsequent "adbusting" illustrates the contrast between guilt and shame in climate change communication. Guilt has tended to align with the individualization of responsibility for climate change and has been primarily deployed over issues of climate-related consumption rather than other forms of behavior, such as failure to engage politically. Shame has been used, largely by civil society groups, as a primary tactic against fossil fuel producers, peddlers of climate denial, and industry-backed politicians.

Keywords: climate change, climate denial, consumers, exposure, fossil fuel producers, guilt, individualization, responsibility, shame

Introduction

In October 2008, Chevron, one of the world's largest fossil fuel companies, placed advertisements around Washington, DC, public transit stops featuring wholesome, human faces with captions such as, "I will unplug things more," "I will use less energy," and "I will take my golf clubs out of the trunk." Six months later, DC activists re-worked the slogans by adding to each the phrase "while Chevron pollutes." This case of corporate advertising and subsequent "adbusting" illustrates the contrast between guilt and shame in climate change communication.

Guilt and shame are social emotions (along with embarrassment, jealousy, envy, empathy, pride, and others) and are highly correlated (Lewis, 1993). But guilt and shame are also distinct tools. Guilt regulates personal behavior, and it is initiated by one's own conscience after a failure to adhere to one's own standards of behavior (Williams, 1993). Because it requires a conscience, guilt works only on individuals. Shame is more complicated and debated, but for the purposes here, shame involves failing the group's standards and exposure to an audience (Keltner & Buswell, 1996). Guilt is a private force, while shame requires onlookers—real or imagined (Jacquet et al., 2015).

Empirical evidence suggests both guilt and shame can be effective in enhancing conformity with a group standard. One experiment that sent letters to voters seemed to elicit guilt by showing individuals their past voting behavior and demonstrated that voter turnout significantly increased when individuals were shown that they had abstained in a recent election (Gerber et al., 2010). In another experiment by mail, this one using shaming, letters threatened to expose to neighbors in a subsequent mailing whether or not an individual voted in an upcoming election which led to substantially higher voter turnout than a control condition (Gerber et al., 2008). Empirical evidence shows that the threat of exposure of the least generous participants in a cooperative experiment can lead individuals to cooperate significantly more with their group compared to a control condition (Jacquet et al., 2011). Both guilt and shame can lead to changes in behavior.

One of the more important distinctions between guilt and shame in the context of climate change is that guilt, because it relies on a conscience, works only at the individual level, since groups lack a conscience and therefore cannot feel guilty. Shame, in contrast, can be used against both individuals and groups by calling their behavior out to an audience (although whether groups can actually feel shame is yet another point of debate; for a more thorough discussion of guilt and shame, see Jacquet, 2015).

In the case of the Chevron advertisements, the original ads ("I will unplug stuff more") attempted to appeal to guilt in the consumers of fossil fuels, while the adbusted version ("while Chevron pollutes") attempted to shame Chevron as producers of fossil fuels. These two versions also demonstrate the way that the use of guilt and shame map on to

shifting views about responsibility for climate change and show that guilt aligns with a view of individual responsibility.

Although major scientific papers on climate change date to the 1950s, it was not until the late 1980s that climate change emerged as a major issue in the U.S. news media and was taken up by federal political institutions, such as the U.S. Congress. The influential testimony by NASA scientist James Hansen before the U.S. Senate in 1988 was followed by the first assessment report of the Intergovernmental Panel on Climate Change (IPCC) in 1990 and then by the first international treaty for climate in 1992 (the United Nations Framework Convention on Climate Change [UNFCCC; Weart, 2008).

The publicity surrounding this string of events, as well as the regulatory threat of climate policy, provided motivation for a well-funded and highly orchestrated corporate-led attempt to undermine the public's certainty about climate change and related support for government policies. That effort would lead to a deep bi-partisan divide over climate in the United States and result in some of the greatest degree of disbelief in anthropogenic climate change in the world (Ipsos Mori, 2014). The corporate-led campaign against climate change would also contribute to the U.S. failure to deliver during key moments of international climate change efforts, such as the refusal to ratify the 1997 Kyoto Protocol (Vidal, 2005).

The United States is not alone in showing political resistance to international climate policy, nor is it alone in its bipartisan divide over the acceptance of climate science or even its promotion of climate denial (e.g., Rahmstorf, 2004). However, several considerations justify a focus on the United States as a leading example. First, the United States is historically the highest overall emitter of greenhouse gases (Friedrich & Damassa, 2014). In addition, it is headquarters to some of the largest fossil fuel companies in the world. Finally, scholarly and journalistic investigations have uncovered years' long efforts by some of these U.S. fossil fuel industry members, conservative groups, and aligned individuals to undermine confidence in climate science and to block or delay policy action to address climate change (e.g., Dunlap & McCright, 2015).

Some of the major misconceptions in the United States over climate change—such as the focus on scientific uncertainty, the "debate" over whether climate change is caused by humans, and pushback about how severe the consequences might be—can be seen as communications battles. One area of interest within the communications battle is the contrasting use of guilt and shame. Since it is not possible to address all situations in which guilt and shame are used in U.S.-based climate change communication, three areas are detailed, which include guilt and fossil fuel consumers; shame and the network of climate denial; and shame and fossil fuel producers.

Guilt and Fossil Fuel Consumers

“Guilt over the environment is at a historic high, generating a flood of makeshift fixes, false claims and doomed schemes to achieve redemption,” a journalist wrote in a 2008 issue of Newsweek (Ellison, 2008). As further evidence that environmental guilt was experiencing a boon during this time, consider these headlines: “Eco-conscious Consumers Pay to Ease Global Warming Guilt” (USA Today, December 13, 2006); “Pleasure without Guilt: Green Hotels with Comfort” (New York Times, December 28, 2007); and “The Incandescent Holdouts, Plagued by Guilt” (New York Times, January 10, 2008). Many guilt-inciting campaigns were related to climate change, such as the “What Would Jesus Drive?” campaign launched in 2002, carbon footprint calculators, and the option to purchase carbon offsets, as well as the Chevron advertisements in 2008 with slogans like “I will unplug stuff more.” The 2006 film about climate change, An Inconvenient Truth, ended by telling the audience: “Tell your parents not to ruin the world you will live in.”

Guilt in general may be considered a healthy reaction to environmental problems like climate change. Scholars often assert that guilt can motivate individuals to make amends for their behavior (Ferguson et al., 1991; Tangney & Dearing, 2002). For example, a survey of conservation volunteers found that many were motivated to volunteer by the desire to feel less guilty for environmental problems (Asah & Biahna, 2012). Research specific to guilt over climate change suggests a similar correlation. A study conducted in Germany showed that participants who reported feeling guilt for climate change also expressed greater intentions “to contribute to repairing the damage” (Harth et al., 2013). Another study in the United States showed that subjects who expressed feeling guilty for climate change also expressed greater willingness to reduce their personal greenhouse gas emissions (Ferguson & Branscombe, 2010).

But how feelings of climate guilt are being alleviated is problematic. Communication campaigns, advertising, and other messaging strategies have not attempted to make individuals feel guilty for failing to engage politically, for instance. Instead, the message that is most commonly communicated is that individuals can assuage guilt over their fossil fuel use by simply changing their purchasing habits or other minor aspects of their own behavior, such as adopting relatively insignificant energy conservation measures (e.g., by unplugging stuff more; Maniates, 2001; Jacquet, 2015).

While some conspicuous choices, such as buying a hybrid vehicle, might allow consumers to signal support for certain kinds of political action, these palliative gestures have aggregated to make very little or no difference in greenhouse emissions and can be susceptible to shifts in individual disposable income or broader economic conditions. As evidence, when gas prices fall, demand in the United States for gas-guzzling vehicles increases (Isidore, 2015). In addition, guilt has been misdirected and felt over behaviors that have very little relative impact on greenhouse gas emissions (Jacquet, 2015). For

instance, a survey of more than 500 U.S. residents found that they believed the single most effective thing they could do to conserve energy was to turn off the lights (Attari et al., 2010), even though driving accounts for a much greater portion of individual greenhouse gas emissions (Jacquet et al., 2013).

Moral licensing—when doing something positive in one realm leads to justifying misbehavior in another (Merritt et al., 2010)—is an additional concern. For example, an experiment demonstrated that households receiving weekly feedback on their water usage decreased their water consumption by about 6%, in comparison to a control group that received no such information. But the same households receiving the feedback also subsequently increased their electricity use by roughly the same percentage (Tiefenbeck et al., 2013). In sum, research on moral licensing suggests that token volunteerism related to consumption or reduction in personal energy use is not an overall effective way of thinking about a large collective action problem like climate change, nor is it an effective way to alleviate guilt.

The use of guilt to address the consumption of fossil fuels matches up with a shift toward individualizing responsibility for environmental problems. Some scientists have supported the view of individual responsibility, noting that the world's wealthiest one billion individuals can be seen as disproportionately responsible for the problem (Chakravarty et al., 2009). It may be that producers are motivated to use guilt (as Chevron was in its ads) because this tactic helps contain the view of responsibility to consumers. It could also be that individualizing the problem is seen as the only option because institutions are weak and vested interests are strong.

Regardless of the motive, the individualization of environmental responsibility is concurrent with the transition from a Keynesian system in which regulations control producers to a neoliberal approach that puts consumers in control and purports that consumers can express their social preferences and change producer behavior through the marketplace (e.g., Jacquet, 2015, Dunlap & McCright, 2015). In the neoliberal context, the endgame is no longer to necessarily reform entire industries but to alleviate the consciences of consumers, at least the individuals who care enough about their consumption to change it. This attempt can be seen in early efforts such as the Keep America Beautiful campaign, which was conceived of in 1953 by the industries that made disposable, nonreturnable beverage cans and bottles. Keep America Beautiful communicated the idea that individuals, not companies, were responsible for litter and pollution, using slogans like "People start pollution. People can stop it." This statement is far from accurate. To ensure gasoline no longer contained lead, which was leading to serious health problems, the main target was not the consumer who bought the gasoline. Instead, governments used legislation to change the rules for producers. As Maniates (2001, p. 32) pointed out, "When responsibility for environmental problems is individualized, there is little room to ponder institutions, the nature and exercise of

political power, or ways of collectively changing the distribution of power and influence in society.”

Shame and the Network of Climate Denial

Climate change communication has often attempted to evoke guilt in individuals for their consumption of fossil fuel use, but guilt has not been part of the main messaging for those who encourage the denial of climate change. Instead, shame—exposing and even moralizing a certain behavior—has been the primary tool used to attempt to correct the messengers (and messages) of climate denial. One reason for this could be that, at least in theory, shame’s power is maximized against behaviors that are perceived as rare (Bénabou & Tirole, 2011), and we know climate denial, particularly among scientists, is indeed rare. The vast majority of scientists are in agreement about general trends regarding climate change, as well as the attribution of these trends primarily to the human use of greenhouse gases (Oreskes, 2004).[1]

Consider the headlines “Obama Campaign Launches Plan to Shame Climate Sceptics in Congress” (The Guardian, April 25, 2013) and “WSJ’s Shameful Climate Denial: The Scientific Consensus Is Not a Myth” (Salon, May 28, 2014). In 2016, the Rockefeller Family Fund, the nonprofit trust started by the heirs of the Rockefeller fortune, released a statement in which they described the ExxonMobil efforts to “confuse the public” as “morally reprehensible conduct.”

Dismissive or doubtful views among the public (sometimes also referred to as “climate denial” or “climate skepticism”) are often the outcome of an interaction between top-down elite communication channels and bottom-up psychological features of the individuals receiving information (Jacquet et al., 2014). Longitudinal research demonstrated this interaction by surveying U.S. residents in 2008 and again in 2011 and showed that the more individuals reported using conservative media, which tend to downplay or dismiss the reality and urgency of climate change, the more those individuals doubted climate change over time (Hmielowski et al., 2014).

Sociologists refer to the climate denial movement as comprised of a network of fossil fuel industry members, wealthy philanthropists, conservative groups, think tanks, and media commentators who have sought to strategically capitalize on the uncertainty that exists in science, creating a false narrative that climate science is too uncertain, or the economic costs are too great, to justify taking policy action to address climate change (Brulle, 2014; Dunlap & McCright, 2015).

The goal here is not to rehash the consensus on climate change, nor to describe in detail the known network of denial (but see Dunlap & McCright, 2011, 2015), the motivations for it, or the network’s vast set of tactics. We now know that a variety of actors are involved, including investor-owned (e.g., ExxonMobil, Chevron) and privately owned (e.g., Peabody

Energy) fossil fuel industries, private industry conglomerates (e.g., Koch Industries), other U.S. corporations (including energy companies, automobile manufacturers), large national associations (e.g., National Association of Manufacturers, U.S. Chamber of Commerce), coalitions (e.g., Global Climate Coalition), contrarian scientists (e.g., Pat Michaels, S. Fred Singer), conservative media (e.g., FoxNews, the Wall Street Journal, and blogs), conservative politicians, astroturf groups (i.e., groups that appear to be grassroots organizations but are not), conservative think tanks and foundations (e.g., the Marshall Institute), anonymized donor-advised funds (e.g., Donors Trust), certain academic journals (e.g., Energy and Environment), and public relations firms.

The goal instead is to identify key moments in exposing the top-down, elite network of climate denial in the United States, when they occurred, and who was responsible for uncovering the information and communicating it (Table 1). Groups attempting to expose climate denial have uncovered and known about fossil fuel industry-led efforts at climate misinformation for 25 years. A 1991 article in the New York Times exposed the fossil fuel industry for attempting to "reposition global warming as theory" rather than fact (Wald, 1991). In 1995, the journalist Ross Gelbspan (1995) wrote about the denial strategy in Harper's Magazine:

> The people who run the world's oil and coal companies know that the march of science, and of political action, may be slowed by disinformation … For the most part the industry has relied on a small band of skeptics—Dr. Richard S. Lindzen, Dr. Pat Michaels, Dr. Robert Balling, Dr. Sherwood Idso, and Dr. S. Fred Singer, among others—who have proven extraordinarily adept at draining the issue of all sense of crisis. Through their frequent pronouncements in the press and on radio and television, they have helped to create the illusion that the question is hopelessly mired in unknowns. Most damaging has been their influence on decision makers; their contrarian views have allowed conservative Republicans … to dismiss legitimate research concerns as 'liberal claptrap'. (p. 34)

Gelbspan (1997) followed this article with a book in which he understood the problem of climate denial as a communications battle. (Confirming this hypothesis, a number of conservative outlets subsequently attacked Gelbspan's reputation.)

Civil society groups, especially environmental organizations and news organizations, have played a fundamental role in exposing the U.S. network of climate denial (Table 1). The role of private actors, including civil society groups such as the Sierra Club, Ozone Action, the National Environmental Trust, and Greenpeace have been instrumental in exposing the disproportionate influence of industry interests. Journalists such as Gelbspan (1995, 1997), New Yorker writer Jane Mayer (2010, 2013, 2016), and news organizations like Mother Jones (Kroll, 2013) and The Guardian (Vidal, 2005) have also produced high-profile investigations related to climate denial. Without these efforts, climate denial might appear to be an independent, bottom-up phenomenon emanating

from scientists, think tanks, and media. In part due to the vigilance of these groups, we know this is not the case, and instead it has been instigated by an elite, top-down effort.

Academics have also made contributions to our understanding of the network of climate denial, although they too have relied on the early work by civil society and journalists. The first academic papers on the counterclaims to climate change (Lahsen, 1999, McCright & Dunlap, 2000) cite Gelbspan (1997) as well as research by nonprofit organizations, such as Ozone Action and Greenpeace. Lahsen (1999) contributed the first academic analysis of the strategy used by contrarian scientists and the industry groups that support them. Academics have also provided large-scale overviews that reflect on climate denial and the motivations of some of the actors involved, especially scientists (e.g., Oreskes & Conway, 2010). (See also The Effects of Network and Cable TV News Viewing on Climate Change Opinion, Knowledge, and Behavior, Defining Objectivity, False Balance, and Advocacy in News Coverage of Climate Change, Journalistic Depictions of Uncertainty about Climate Change Across Countries, and Elite News Coverage of Climate Change.) McCright and Dunlap contributed the first big-picture academic paper on the network of climate denial (Dunlap & McCright 2011) and remain the most active sociologists on this issue. They note that social scientists need to increase their contributions to understanding climate denial (Dunlap & McCright, 2015). (See also Communication Strategies of the Climate Change Denial Movement.)

Social scientists have also made a major contribution in helping to understand the complicity of the media, particularly corporate-owned networks and newspapers. Boykoff and Boykoff (2004), for instance, added empirically to the accusation that journalistic "balance" (representing both sides of an issue) led to a biased outcome for the communication of climate change. We also know that the U.S. media expresses more skeptical positions about climate than outlets in other countries and that certain U.S. media, like Fox News and the Wall Street Journal, have emphasized scientific uncertainty more than others (Table 1).

Politicians have also played a role in exposing climate denial, notably when Senators John Rockefeller IV, a Democrat from West Virginia, and Olympia Snowe, a Republican from Maine, issued a press release in 2006 asking ExxonMobil to stop funding climate change denial (Goldenberg, 2015). In 2016, 19 Democratic senators, led by Senator Sheldon Whitehouse of Rhode Island, made a series of presentations in Congress detailing the web of the denial and some of its major actors.

Whistleblowers appear somewhat underrepresented as a source of exposing climate change denial, although there are many instances of "leaked documents" that might imply the involvement of a whistleblower. The most visible instance of whistleblower involvement was from 2005 when Rick Piltz, a climate policy analyst in the George W. Bush administration, leaked documents to the New York Times showing that Philip Cooney, a former oil lobbyist who had become chair of the Council on Environmental Quality, had doctored government documents on climate change that were written by

scientists to express more uncertainty (Revkin, 2005). Cooney resigned as a result of the exposure (there was no lawsuit), and then went on to work for ExxonMobil.

The investigative research that has yielded some of the greatest insights into the network of denial has often relied on data either made available through corporations or requested from public institutions using the U.S. Freedom of Information Act (FOIA). ExxonMobil's donations to nonprofit foundations that promote climate denial were available because ExxonMobil published tax forms and details in their 2005 and 2006 "Worldwide Giving Report" (Greenpeace, 2015). The documents that showed Willie Soon's vast amount of funding from fossil fuel companies were made possible through a FOIA request to the Smithsonian (Soon is employed at the Harvard-Smithsonian Center for Astrophysics; Greenpeace, 2015). Such a request for funding sources is not possible for contrarian scientist William Happer because he is employed by a private university (Princeton University), which is not subject to FOIA requests. Private institutions and the people who work for them therefore remain less susceptible to this form of social exposure because they are exempt from FOIA requests. The recent information on privately owned Peabody Energy's climate denial funding was available only because of Peabody's recent bankruptcy, which required that it disclose certain financial documents (Kert Davies, personal communication, March 30, 2016). Nonprofits and foundations, such as the Cato Institute, are not required by law to disclose the names of donors. Which legal obligations make institutions more or less susceptible to social exposure is an important area for future research.

The use of social exposure in an attempt to reduce or eliminate climate denial has had mixed effects, as exposure often does. Lessons can be learned from the Toxic Release Inventory (TRI), a program administered by the U.S. Environmental Protection Agency (EPA) and authorized by federal law, which requires more than 21,000 facilities to annually report on their release of more than 650 toxic chemicals and displays the data on an EPA website. The TRI policy, which relies on the soft power of transparency, has led to successful reductions in the releases of toxic chemicals, although there has been high variability in the results, with some states and corporations performing much better than others (Kraft et al., 2011).

Shaming has also changed some behavior related to climate denial, though with limited effects. Public opprobrium for ExxonMobil reached a crescendo in the mid-2000s. In 2004, Greenpeace published online ExxonSecrets.org, a database detailing ExxonMobil's funding to various climate-denying organizations. In September 2006, the Royal Society of the UK sent an open letter to ExxonMobil expressing concern for their support for organizations that misinformed the public about climate change (Adam, 2006). In October 2006, two U.S. senators asked ExxonMobil to stop funding climate change denial (Goldenberg, 2015). The Union of Concerned Scientists (2007) released their first (but not last) report about ExxonMobil's antics in February 2007. From 2003 to 2007, the ExxonMobil Foundation was openly funding many climate denial organizations. In 2008, ExxonMobil publicly pledged to stop funding climate denial, although it did not uphold its promise (Goldenberg, 2015). Subsequent efforts exposed Koch Industries for funding

climate denial. Greenpeace and others reported that the privately owned company was outspending ExxonMobil on climate denial (for the first article on the Koch contributions, see Harkinson, 2009). However, following the negative exposure, ExxonMobil and Koch Industries began, around 2008, to funnel funding to conservative groups that question climate science or opposed related policy action through less transparent philanthropic intermediaries such as Donors Trust, which allow for anonymous giving (Kroll, 2013; Brulle, 2014). This is not necessarily an example of shaming being successful, but it demonstrates that shaming can change corporate behavior.

Finally, why has shaming been the key tactic when dealing with climate denial? Society generally views responsibility for a problem in three ways: causal, moral, and legal (Jamieson, 2015). Until just recently, there was no legal approach to deal with climate denial. If society comes to see an individual or institution as having causal and moral responsibility, but no legal responsibility, then shame moves up the list of options for social control.

Exposing the network of denial and framing it as “deception” and “misleading” has been the primary tactic employed by groups and individuals seeking to counter the efforts of the climate change denial movement. So far, the defense from the climate countermovement is that expressing climate denial is a form of First Amendment freedom of speech and therefore is protected under law. Their defense rests on the notion that denying climate change is not illegal. Recent efforts to litigate for spreading inaccurate information, at least against some companies (e.g., ExxonMobil), will put this assumption to the test. In the meantime (including the previous decades), social exposure remains the primary tactic to try to counter climate change denial.

Table 1: Key moments contributing to the understanding of the top-down, elite network of climate denial in the United States

Year	Type of person/ org	Instigator/source	Exposed	Specifically	Transgression
1991	Media/NGO	Wald (1991) *New York Times* (given documents by the Sierra Club)	Fossil fuel companies and utilities	Coal-burning companies, the front group Information Council on the Environment (ICE), and contrarian scientists (Robert C. Balling, Pat Michaels, and Sherwood B. Idso)	Creating a campaign to reposition global warming as theory (rather than fact)

1995	Media	Montague (1995) Rachel's Environment & Health Weekly	Oil and gas industry influence, Republican politicians	Mobil Oil, S. Fred Singer, Representative Dana Rohrabacher (R., CA)	Spread misinformation as scientific consensus builds, misconstrue the truth about climate change for private interests or funds from private interests

1995	Media	Gelbspan (1995) Harper's Magazine	Climate skeptics and industry	Global Climate Coalition (GCC), National Coal Association, American Petroleum Institute, Western Fuels, and many other energy corporations, and contrarian scientists (Richard S. Lindzen, Pat Michaels, Robert Balling, Sherwood Idso, and Fred Singer), and Representative Dana Rohrabacher (R., CA)	The world's oil and coal companies spread disinformation and have relied on "a small band of skeptics" (who have been funded by the oil and coal companies)

1996	NGO	Ozone Action (1996A, 1996B)	Contrarian scientists, industry front groups, conservative think tanks, foreign governments	Pat Michaels, Robert Balling, ICE, Government of Kuwait, Sallie Baliunas, the George C. Marshall Institute	Contrarian scientists who take corporate and special interest money (Balling took money from the Kuwait government) to spread misinformation about climate change
1997	Media	Gelbspan (1997)	Fossil fuel industry, contrarian scientists	For example, Pat Michaels, Robert Balling, and Richard Lizden	Coal and oil industry financed a small group of contrarian scientists who attempt to discredit mainstream climate consensus and who receive disproportionate attention in Congress

1998	NGO	Climate Bulletin-National Environment Trust (1998)	Oil and gas industry & associated organizations	American Petroleum Institute—on behalf of Exxon, Chevron, and an assortment of right-wing and industry front groups	Laid out a secret $5 million plan to block the global warming treaty by such means as “recruiting and training” scientists and teachers to spread junk science to the public

1999	Academic	Lahsen (1999)	Energy and industry lobbyist group; contrarian scientists	GCC, Fred Seitz, and William Nierenberg, the Wall Street Journal	Contrarian scientists use conspiratorial methods to accuse the IPCC authors of manipulating Chapter 8 in the 1995 IPCC report after final revisions. The claim was initially circulated to the media by the GCC, and Fred Seitz's op-ed, "A Major Deception on Global Warming" in the Wall Street Journal

2000	Academic	McCright and Dunlap (2000)	Conservative think tanks	14 conservative think tanks (e.g., National Center for Policy Analysis, Heartland Institute, National Center for Public Policy Research)	Identified the key arguments conservative think tanks used to deny climate change in their publications
2002	NGO	Greenpeace	Investor-owned fossil fuel company	ExxonMobil	Documented the effort for over a decade (starting in 1990) of ExxonMobil and its front groups to deny the science of climate change

2003	Academic	Dispensa and Brulle (2003)	US mainstream media	New York Times and Washington Post	U.S. media reports information that is not in line with scientific consensus, especially when compared to a newspaper from Finland or New Zealand

2003	Academic	McCright and Dunlap (2003)	Conservative think tanks, U.S. mainstream media, and contrarian scientists	The 14 conservative think tanks in McCright and Dunlap (2000), Sallie Baliuna, Robert Balling, Jr., Richard Lindzen, Patrick Michaels, and Fred Singer	Conservative think tanks enlisted climate skeptic scientists as a mobilizing anticlimate change movement, while a Republican-led Congress starting in 1994 increased their visibility and proportion of the debate in hearings, resulting in their increasing dominance in the media

2003	Media	Burkeman (2003) The Guardian	U.S/ Republican Party	Frank Luntz, a hired consultant to the Republican Party	The memo urges Republican politicians to communicate that there is no scientific consensus on the dangers of greenhouse gases
2004	Academic	Boykoff and Boykoff (2004)	U.S. mainstream media	Newspapers (New York Times, Washington Post, Los Angeles Times, Wall Street Journal)	Journalistic balance leads to bias (overrepresenting the denialist position due to a supposed mandate to present a balanced story)

2004	Media	Gelbspan (2004)	Republican politicians, fossil fuel industry, contrarian scientists, U.S. mainstream media	George W. Bush Administration, ExxonMobil, Peabody Coal, Sallie Baliunas, Willie Soon, API	Documents the network of denial and makes an indictment of American news media coverage of climate change as well as strong statements about fossil fuel corporations, for example, “what began as a normal business response by the fossil fuel lobby— denial and delay—has now attained the status of a crime against humanity”

2004	NGO	Greenpeace	Investor-owned fossil fuel company	ExxonMobil	Greenpeace launched exxonsecrets.org, an online database that exposed the links between ExxonMobil money, conservative think tanks, associations, and contrarian scientists
2005	Academic	Antilla (2005)	U.S. mainstream media	255 newspapers based in 43 different states as well as Washington, DC and wire services	Journalistic balance leads to bias, and many news outlets repeatedly use contrarian scientists with known ties to industry

2005	Media	Revkin (2005) New York Times Rick Piltz whistleblower	Republicans	Phillip Cooney, White House aide to President George W. Bush and former lobbyist for API	Edited government climate reports from 2002 to 2003 to amplify uncertainty
2005	Media	Mooney (2005) Mother Jones	Investor-owned fossil fuel company	ExxonMobil	ExxonMobil has funded at least 40 organizations that deny climate change, including
2006	Academic	Bob Ward, The Royal Society (Adam, 2006)	Investor-owned fossil fuel company	ExxonMobil	Letter stating Exxon was being “inaccurate and misleading” on the question of climate certainty. Exxon was funding at least 39 organizations to help spread the message

2006	Politicians	Senators Rockefeller and Snowe (Goldenberg 2015)	Investor-owned fossil fuel company	ExxonMobil	Sent a letter to Exxon's incoming chief executive asking the company to stop funding climate deniers
2007	NGO/Academic	Union of Concerned Scientists (2007)	Investor-owned fossil fuel company, front groups, and contrarian scientists	ExxonMobil, Exxon-Mobil-funded organizations, Sallie Baliunas, Robert C. Balling, Jr., John Christy, Hugh Ellsaesser, Sherwood B. Idso, David R. Legates, Richard Lindzen, Patrick Michaels, Fred Seitz, Fred Singer, and Willie Soon	A report about ExxonMobil revealing that it funneled nearly $16 million between 1998 and 2005 to a network of 43 advocacy organizations to manufacture uncertainty about climate change. Also makes connections to overlaps between tobacco and climate disinformation

2007	NGO	Greenpeace (2007)	Investor-owned fossil fuel company	ExxonMobil	ExxonMobil had said in 2006 that it had discontinued funding for climate denialist groups, but this report demonstrated that at least 41 of the groups were still receiving Exxon funding
2008	Academic	Boykoff (2008)	U.S. mainstream media	Television shows/ networks (ABC, CBS, NBC, and CNN)	Balance as bias
2009	Media	Harkinson (2009) Mother Jones	Fossil fuel companies and conservative think tanks	For example, ExxonMobil and the Koch family, and Atlas Foundation (30 foreign think tanks also listed)	Funding an international network of climate denial in advance of the climate negotiations in Copenhagen

2010	Academic	Oreskes & Conway (2010)	Contrarian scientists	Bill Nierenberg, Fred Seitz, Fred Singer, and Robert Jastrow	Linked a small group of scientists to purposely sowing doubt and undermining scientific consensus across multiple issues, including the dangers of smoking, the effects of acid rain, the existence of the ozone hole, and climate change
2010	Academic	McKnight (2010)	Media	News Corporation, including the New York Post and Fox News	Balance as bias

2010	NGO/Media	Greenpeace/Mayer (2010) New Yorker	Privately owned industry conglomerate	Koch Industries	Shows the connections and dollar amount of Koch for climate denial and the obstruction of climate policy (and that Koch had outspent ExxonMobil)
2011	Academic	Dunlap and McCright (2011)	Network of climate denial	Fossil fuel industry, corporate America, conservative foundations, conservative think-tanks, front groups, media, politicians, blogs, and astroturf organizations and campaigns	Describes the interrelationships between these groups

2011	Media	Carbon Brief (2011)	Contrarian scientists and investor-owned fossil fuel company	Sherwood B. Isdo, Patrick J. Michaels, Bruce Kimball, Willie Soon, John R. Christy, Ross McKitrick, Indur M. Goklany, Richard Lindzen, David H. Douglass and ExxonMobil	ExxonMobil linked to 9 out of 10 of the top contrarian scientists based on an analysis of 938 published papers
2011	Media	Carbon Brief (2011)	Academic journals	Energy and Environment and its editor, Sonja-Boehmer Christiansen	Energy and Environment published the greatest number of climate skeptical papers (15%) based on an analysis of 938 published papers
2011	NGO	Greenpeace (2011)	Privately owned industry conglomerate	Koch Industries	Update from 2010 report that reveals an additional $6.4 million in Koch funding in 2009

2011	NGO	Greenpeace (2011)	Contrarian scientist	Willie Soon	Showed that Soon received funding from fossil fuel companies
2012	Academic/media	Coll (2012)	Investor-owned fossil fuel company and its CEOs	ExxonMobil and, in particular, Lee Raymond	Shows how climate denial is part of the ExxonMobil culture, but that it was most intense under the leadership of CEO Lee Raymond (1993-2005)
2012	Academic	Painter and Ashe (2012)	U.S. mainstream media	New York Times and Wall Street Journal	U.S. newspapers have higher proportion of articles expressing skeptical/denialist positions about climate than other countries

2012	Academic	Feldman et al. (2012)	U.S, mainstream media	Fox News	Fox News takes a more dismissive tone toward climate change than CNN and MSNBC
2013	Media/Academic	Mayer (2013) (based on report by Investigative Reporting Workshop at American University)	Privately owned industry conglomerate	Koch Industries	Koch funding has obstructed climate policy; for example, it has helped persuade members of Congress to pledge to oppose any legislation related to climate change that does not come with an equivalent in tax cuts

2013	NGO	Organizing for Action	Republican politicians	Members of Congress and governors	Details public statements and voting records that deny climate change.
2013	Media	Kroll (2013) Mother Jones	Anonymized donor-advised funds	Donors Trust and Donors Capital Fund	Donors Trust keeps its contributors secret and allows rich donors to fund climate denial organizations

2013	Academic	Dunlap and Jacques (2013)	U.S. mainstream media and conservative think tanks	108 climate denial books	72% of climate denial books published between 2000 and 2010 tied to conservative think tanks, which get published due to lack of peer review and allows scientifically unfounded claims to be recycled and amplified
2013	Academic	Elsasser and Dunlap (2013)	U.S. mainstream media	80 conservative op-ed columnists	They express a highly dismissive view of climate change and are critical of climate science—all emphasize uncertainty

2013	NGO	Greenpeace (2013)	Network of climate denial	Funders (public and private oil and gas industries), think tanks, contrarian scientists, U.S. politicians	Detailed and specific analysis on attacks of each IPCC report, personal attacks and threats on climate change scientists, and the global spread and global strategy of climate denialist ideologies and actors. It also revealed the fake or outdated credentials of many denialists and the purposeful faking or misconstruction of existing data

2014	Academic	Brulle (2014)	Conservative foundations and anonymized donor-advised funds	140 foundations, including Donors Trust, Donors Capital Fund, Scaife and Koch Affiliated Foundations, and the Bradley, Howard, Pope, Searle, and Templeton Foundations	Conservative foundations gave 5,299 grants adding up to $558 million to 91 climate-denying organizations between 2003 and 2010
2014	Academic	Bailey et al. (2014)	U.S. mainstream media	New York Times, Wall Street Journal	New York Times and Wall Street Journal use more hedging language compared to El Pais and El Mundo from Sparin

2014	Media/NGO	Goldenberg and Karim (2014) The Guardian/Climate Investigations Center	Public relations firms	For example, Edelman, Oglivy, WPP, WE, Hill, & Knowlton	The PR industry is a major aspect of influence and makes money by representing climate denial
2014	Media	Merchant (2014) Vice Motherboard	Public relations firm	Edelman	The world's biggest PR firm worked with organizations that deny climate change
2014	NGO	Committee for Skeptical Inquiry	U.S. mainstream media	For example, New York Times	Ask the media to stop using the term "skepticism" when referring to climate change denial, as it grants false credibility to this group of denialists

2014	Academic	Sharman (2014)	blogs	A network of 171 individual blogs, the three most central of which are: Climate Audit, JoNova, and Watts Up with That	Challenge mainstream climate science, or criticize the climate science system
2015	Media	Banerjee et al. (2015) Inside Climate News	Investor-owned fossil fuel company	ExxonMobil	Covers the decades of willful denying of science by ExxonMobil despite proof that they knew and were even conducting climate science

2015	NGO/Academic	Union of Concerned Scientists	Investor-owned fossil fuel companies, contrarian scientists, industry front groups	ExxonMobil, Chevron, ConocoPhillips, BP, Shell, Peabody Energy, and others	Leaked documents from the fossil fuel industry showing climate change denial funding, as well as internal climate science understanding many years ago
2015	Media	Jerving et al. (2015), LA Times	Investor-owned fossil fuel company	ExxonMobil	Although Exxon has been denying climate science and climate modeling based on this science, they have been internally researching, demonstrating, and using climate models to make predictions and assess risks/ opportunities in the future

2015	Academic	Farrell (2015)	Fossil fuel companies	ExxonMobil and Koch family foundations	Organizations that received corporate funding produced a text that is qualitatively different than messages from organizations that did not receive corporate funding
2015	Media	Inside Climate News (2015)	Contrarian pundits and scientists	Ron Arnold, Timothy Ball, Joe Bast, Joe Bastardi, Michael Bastasch, William Briggs, Russell Cook, Judith Curry, Joe D'Aleo, James Delingpole, David Paul Driessen, James Enstrom, Steve Goddard (pseudonym for Tony Heller), Pierre Gosselin, William Happer, Jim Lakely, Pat	These pundits and scientists were consulted about stopping release of Merchants of Doubt—the documentary film that exposed their work.

				Michaels, Steven Milloy, Christopher Monckton, Marc Morano, Joanne Nova, Roger Pielke, John Ray, Thomas Sheahan, Fred Singer, Willie Soon, Roy Spencer, James Taylor, Anthony Watts	
2016	NGO	Center for International Environmental Law	Fossil fuel companies	ExxonMobil and others	Hundreds of documents show that ExxonMobil and other fossil fuel companies knew about the impacts of climate change for decades and yet actively funded climate denial

2016	Media	Goldenberg and Bengtsson (2016)	Privately owned coal company	Peabody Energy	Peabody funded the network of climate denial, such as trade associations, corporate lobby groups, and industry front groups, as well as conservative think tanks
2016	NGO	Climate Nexus	U.S. mainstream media	Wall Street Journal	Wall Street Journal's opinion pages over the last 20 years spread doubt and denial of both the science and effectiveness of climate change action, and leaves readers misinformed about the consensus of science and of the risks of the threat

2016	Politicians	19 Democratic U.S. senators (Whitehouse, 2016)	Network of climate denial	Funders (public and private oil and gas industries), think tanks, contrarian scientists, the Wall Street Journal, and other facets of the "web of denial"	Speeches before Congress criticizing the "massive campaign to deceive the public about climate change to halt climate action and protect their bottom lines"
2016	Media	Mayer (2016)	Privately owned industry conglomerate and industry front group	Charles and David Koch and Americans for Prosperity	Funding of climate denial, including lobbying lawmakers in 2011 for a "no climate tax" pledge

Shame and Fossil Fuel Producers

Shame, it is argued, comes with many liabilities in terms of how the emotion interacts with individual psychologies. Shame often provokes painful feeling in individuals, including the desire to hide or escape (Lewis, 1995). Perhaps in part because of shaming's liabilities, shaming individual fossil fuel consumers has not been a serious activity, although one New York Times columnist suggested that individuals should wear "electronic jewelry with real-time displays of carbon footprints" (Tierney, 2008) presumably to elicit the use of shame and honor, although what would motivate individuals to participate is unclear. Some of shaming's liabilities are therefore avoided when exposure is directed at groups rather than individuals (Jacquet, 2015).

At the same time, some have grown weary of attributing climate change responsibility to individual consumers (e.g., Maniates, 2001; Jacquet, 2015). Sociologist Charles Perrow, in a critical review of sociologist Anthony Giddens's (2006) book, The Politics of Climate Change, disagreed with Giddens's individualization of the problem: "It is not our daily habits that are responsible for the mammoth externality of industry freely dumping carbon in the air" (Perrow, 2010, p. 412).

In addition to seeing fossil fuel corporations as largely responsible for the climate countermovement, the 21st century has also witnessed arguments in favor of greater responsibility for fossil fuel producers. There is a relationship between the two, since some of those who argue for more responsibility for industrial producers also point to their corporate response to climate science (i.e., to disparage and deny it) as part of the reason to see producers as disproportionately responsible (Frumhoff et al., 2015). It was also not just the producers' role in climate denial, but also their efforts to lobby the U.S. government (and others) against any climate policies that would decrease revenues—removing subsidies, passing a carbon tax, funding renewable energy, or ratifying the Kyoto Protocol. Another immediate issue, especially for investor-owned corporations, is their continued search for more fossil fuel reserves, particularly in light of what we know about climate change (Heede & Oreskes, 2016).

Many efforts are now being aimed at exposing fossil fuel producers (guilt is not part of the messaging). Fossil Fools Day, a day of activism related to climate change on April 1, which began in 2004 in the United States and Canada, was the day that DC activists reworked the Chevron ads and added to the bottom of each declaration the phrase "while Chevron pollutes." Academics are also providing empirical data. Instead of quantifying emissions by country, which had been the norm, Heede (2013) calculated carbon dioxide and methane emissions by corporations. He found that just 90 corporations (some of them state-owned) are responsible for nearly two-thirds of historic emissions. Chevron is the single greatest contributor—responsible for 3.5% of global carbon dioxide and

methane emissions over the last century and a half (Heede, 2013). Such a finding reveals an inconsistency between the company's advertised goal of promoting less energy use and its success in promoting the consumption of fossil fuels.

Overall, support for the harsh criticism and social censor of fossil fuel producers appears to be gaining momentum, although not without pushback. In response to Heede's (2013) research on industrial fossil fuel companies, *New York Times* journalist Andy Revkin (2013) asked: "So no role for those of us driving & flipping switches?"—showing the temptation to put pressure back on the individual. In *The Moral Case for Fossil Fuels*, Alex Epstein (2014), president of the Center for Industrial Progress, wrote a book arguing that fossil fuels should be celebrated. The *Wall Street Journal* praised the book for its "surprisingly little-heard" message. According to the reviewer, "If you drive a car, or use modern medicine, or believe in man's right to economic progress, then according to Alex Epstein you should be grateful—more than grateful" (Broughton, 2014). A lobbyist for the coal industry said that after the 2015 international climate meeting in Paris, the coal industry would be "hated and vilified in the same way that slave-traders were once hated and vilified" (Nelsen, 2015). Enacting climate policy and reducing fossil fuel are becoming increasingly moralized (Markowitz 2012), which can amplify the power of shaming and other informal sanctions (Mohamed, 2013).

Recent examples suggest that activities related to the shaming of fossil fuel producers are likely to grow in visibility and intensity over the next decade and beyond. Break Free 2016 was a series of demonstrations around the world that were directed at fossil fuel companies (see breakfree2016.org). Part of the aim of the global fossil fuel divestment campaign, which includes more than mere social exposure since it also seeks to remove resources from a firm, is to stigmatize fossil fuels. There are also campaigns not just to divest from fossil fuel companies, but to also insist that institutions no longer accept donations from fossil fuel companies. An example is the Liberate Tate campaign, which insisted that the Tate Modern Art Gallery in London stop accepting donations from BP. The campaign succeeded in pressuring BP to cease offering the gallery funding (Khomami, 2016).

It is not just producers of fossil fuels, however, that can expect a spotlight of negative attention. In fact, producers might be some of the most resistant to social pressure since their operations are not easily changed. As an alternative, at least one civil society group, BankTrack, singles out banks with the largest investments in fossil fuels, especially coal companies (see banktrack.org). We can expect that shame will go after the entire fossil fuel supply chain, and there might be some points of leverage that are more sensitive to social exposure than others.

Discussion

Guilt and shame are two different tools, and through their use we can see manifestations of how the problem of climate change is perceived and who is responsible for it. On one hand, guilt only works on individuals and has been primarily deployed over issues of climate-related consumption rather than other forms of behavior, such as failure to engage politically. Shame, on the other hand, can be used against both individuals and groups by calling their behavior out to an audience. Shaming allows citizens to express criticism and social sanctions, attempting to change behavior through social pressure, often because the formal legal system is not holding transgressors accountable. Morals are often in front or even outside of the law. There are currently no laws against promoting the denial of climate change or the production of fossil fuels; consequently, there are no formal mechanisms to enforce climate acceptance or the reduction of fossil fuels. Instead, information mechanisms of persuasion, such as shame, have been the primary strategy.

Both guilt and shame come with liabilities, some of which have already been discussed. Both guilt and shame are flawed due to the heterogeneity of their effectiveness—they work better on some people (and, for shame, groups) than others. Massaro (1991) wrote: "Those people who are most likely to defy social norms and risking shaming sanctions, even within close knit societies, are the very rich and the very poor." This is because the rich are "insulated by their wealth" and the poor have "less 'social standing' to lose." Guilt may lead to issues of moral licensing, while shame may lead to a desire to hide the behavior, as ExxonMobil and Koch Industries did by anonymously funding climate denial through Donors Trust. There is the additional worry with shame that those who achieve a bad reputation will then be tempted to maintain it or that shame will further isolate rather than reintegrate transgressors. For that reason, the threat of shame is often more effective than the experience of shame (Jacquet, 2015).

The liabilities are not entirely on the side of the targets of shaming efforts, but also on the instigators, especially when exposing the powerful. A main strategy is a counterattack on the instigator's reputation. When the Guardian approached ExxonMobil for an interview in 2015, the company responded: "ExxonMobil will not respond to Guardian inquiries because of its lack of objectivity on climate change reporting demonstrated by its campaign against companies that provide energy necessary for modern life, including newspapers" (Goldenberg, 2015). After reporter Jane Mayer wrote the first exposé about the Koch brothers (Mayer, 2010), the brothers hired a private investigations firm that attempted to defame Mayer's reputation as a reporter (Mayer, 2016).

The use of guilt and shame in climate change communications must be seen, at least partly, as a result of the regulatory stalemate over climate change. Both guilt and shame are informal sanctions that stand outside of the purview of government. While guilt has tended to align with the individualization of responsibility for climate changes, shame has

been used against fossil fuel producers, peddlers of climate denial, and politicians. Civil society has been most involved with using shame in their communication efforts, and we can expect them to carry an even larger burden in the future since the Paris Agreement rests largely on public pressure to hold countries (and others) to their commitments to reduce emissions (Jacquet & Jamieson, 2016).

The reliance on social criticism to reduce misinformation and even to reduce the production of a socially hazardous substance is not unique to fossil fuels. Tobacco companies knew about the links between their product and cancer as early as the late 1950s and perhaps before. As with fossil fuel companies, tobacco companies formed pro-industry groups that masqueraded as science and shrouded the research linking smoking to cancer with uncertainty, fought public health legislation, and targeted teenagers with advertising. It took decades for a network of doctors, media outlets, politicians, and civil society groups to coalesce and push for more regulatory oversight. Although individuals ultimately make the decision of whether to smoke, society came to hold the tobacco industry accountable for its efforts to promote smoking and resist antismoking efforts (Oreskes & Conway, 2010). The monumental court case against tobacco took place in 1998, although efforts to mitigate the public health effects of smoking continue both in the United States and abroad.

We can expect social pressure to be a major tool moving forward in a globalized world with many regulatory gaps (Jacquet & Jamieson, 2016). Shaming often has heterogeneous effects, but it can make a significant difference. However, shame should not be seen as a replacement for government regulation or policy action, but rather as a tool that can complement or even instigate regulation.

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Notes:

(1.) It should be noted, however, that the climate denial movement has also consistently attacked the credibility of individual climate scientists. In other words, part of the strategy behind those who stood to gain politically and economically from climate denial was to control climate change communication and to, in some cases, use shame to attack the mainstream climate science and scientists (e.g., Lahsen, 1999).

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